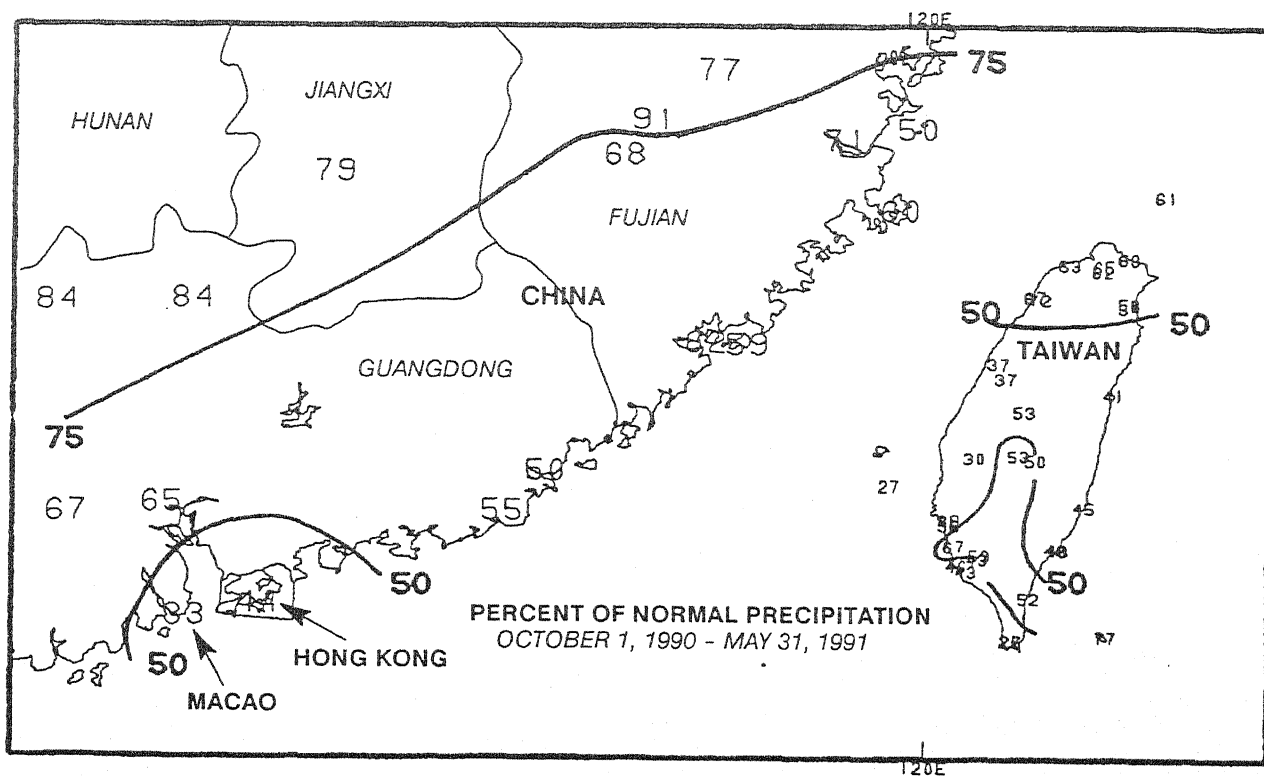


WEEKLY CLIMATE BULLETIN

No. 91/22

Washington, DC

June 1, 1991



Widespread drought has developed across Taiwan and portions of southeastern China during the last 8 months as only 25 to 75 percent of normal precipitation was recorded. According to press reports, a recent heat wave has combined with the low rainfall to adversely affect the planting and harvesting of rice, grain, and vegetables. Farmers in southern Taiwan were forced to halt planting entirely, and some districts may be declared "disaster areas". The drought may also hurt industry by cutting water supplies to factories and causing the state-run power company, which relies on hydroelectric plants for much of its output, to ration electricity. Since October 1990, deficits as large as 700 mm have accumulated across Taiwan.



UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE-NATIONAL METEOROLOGICAL CENTER
CLIMATE ANALYSIS CENTER



WEEKLY CLIMATE BULLETIN

This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

- *Highlights of major climatic events and anomalies.*
- *U.S. climatic conditions for the previous week.*
- *U.S. apparent temperatures (summer) or wind chill (winter).*
- *U.S. cooling degree days (summer) or heating degree days (winter).*
- *Global two-week temperature anomalies.*
- *Global four-week precipitation anomalies.*
- *Global monthly temperature and precipitation anomalies.*
- *Global three-month precipitation anomalies (once a month).*
- *Global twelve-month precipitation anomalies (every three months).*
- *Global three-month temperature anomalies for winter and summer seasons.*
- *Special climate summaries, explanations, etc. (as appropriate).*

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Climate Analysis Center via the Global Telecommunications System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

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GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF JUNE 1, 1991

1. Northern Alaska and Northwestern Canada:

COOLER CONDITIONS ENVELOP REGION.

Temperatures averaged only slightly above normal during the week, signaling an end to the recent mild spell [Ended after 6 weeks].

2. Northwestern, Central, and Southeastern United States:

WIDESPREAD SURPLUS MOISTURE.

Most locations from the northern Rockies to the Southwest measured 50–150 mm of rain, with up to 250 mm deluging parts of northern Mississippi. Meanwhile, abnormally high totals of 10–30 mm fell on portions of the northern Intermountain West and Pacific Northwest. Since mid-April, 200–375 mm above normal rainfall was measured along the eastern and northern Gulf Coast while 100–165 mm of excess rain fell across portions of Iowa and Nebraska. Much of the Intermountain West and Pacific Northwest observed 2 to 3.5 times the normal totals during the period [10 weeks].

3. Central and Southeastern North America:

EARLY-SEASON HEAT WAVE BAKES REGION.

Apparent temperatures exceeded 40°C along much of the middle and southern Atlantic Coast and in parts of southern Texas as the August-like hot spell continued across central and southern sections of the region. Temperatures averaged of 3°C to 7°C above normal across southern Canada and most of the eastern U.S. while departures approaching +9°C combined with high humidities to keep sweltering conditions entrenched from the southern Great Lakes southeastward to the mid-Atlantic. Several locations established new extreme maximum and average temperature records for May [5 weeks].

4. Bermuda:

VERY DRY WEATHER THREATENS WATER SUPPLIES.

May 1991 was the second driest month on record since 1931, exacerbating dryness that began in mid-April. Bermuda's small fresh water supply needs continual replenishing, and even short-term dry

spells such as the current one threaten to deplete supplies. Since mid-April, a rainfall deficit of 105 mm has accumulated [5 weeks].

5. Eastern Europe, North Africa, and the Middle East:

COOL WEATHER SHIFTS SOUTHEASTWARD.

Temperatures returned to near normal across most of western Europe, but departures of -4°C to -7°C again affected Italy, eastern Europe, the Balkans, northern Africa, and the Middle East [7 weeks].

6. The Eastern Balkans, Ukraine, and Northern Middle East:

DRIER WEATHER INVADES MOST AREAS.

Fewer than 20 mm of rain fell on most of eastern Europe, providing some relief from the recent wet spell. Farther east, 20–50 mm of rain fell on the eastern Balkans and western Turkey while 40–85 mm soaked much of the Ukraine [Ending after 8 weeks].

7. West-Central Africa:

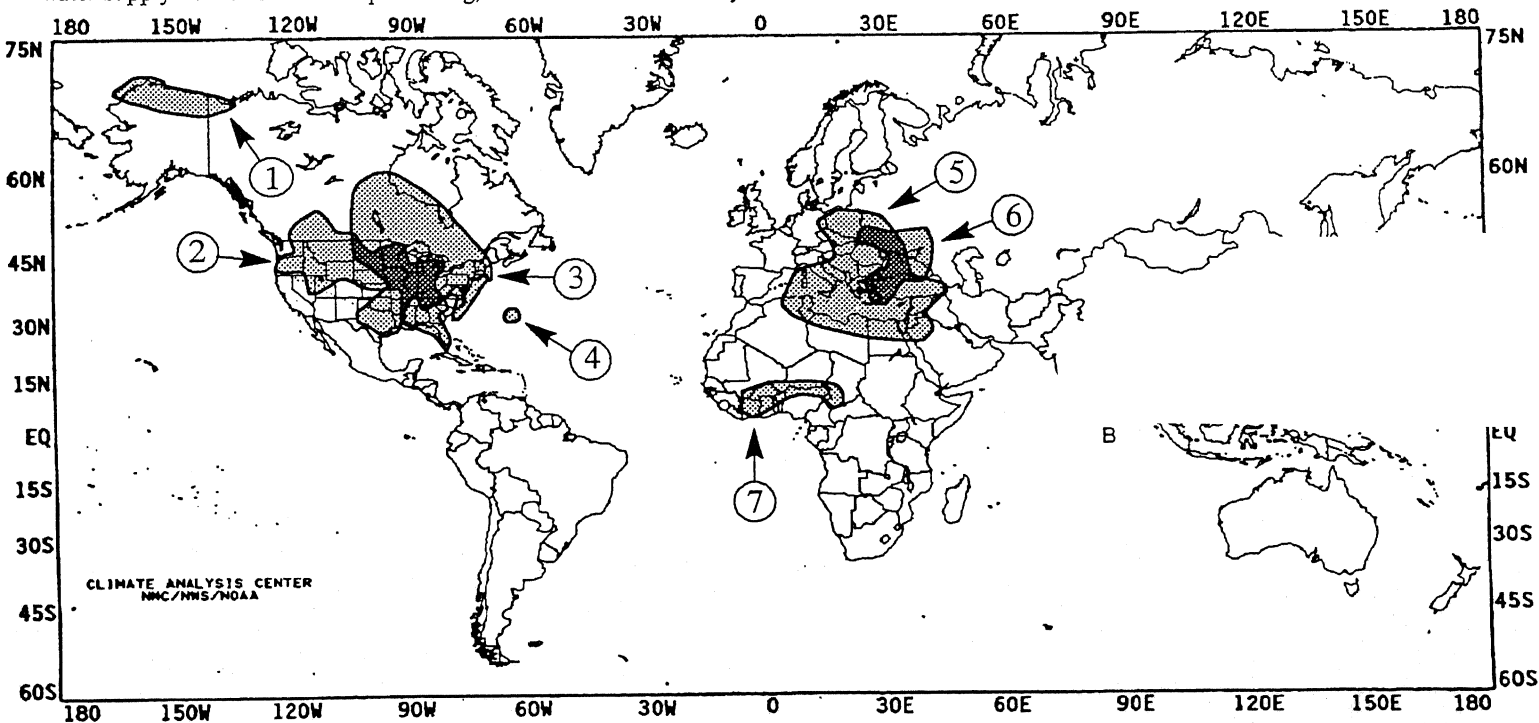
COOL, RAINY CONDITIONS PERSIST.

Most of Ghana, Cote d'Ivoire, Togo, Benin, and southwestern Burkina Faso experienced another cloudy, wet week as 50–150 mm of rain were measured. Farther east, abnormally heavy amounts (20–50 mm) also dampened the southern tier of Niger and western Chad. Since mid-April, surpluses of 200–350 mm have accumulated in portions of Burkina Faso, Cote d'Ivoire, and Ghana [Wet - 6 weeks]. The prolonged, frequent cloud cover accompanying the wet spell has created abnormally low average temperatures, with weekly departures of -2°C to -3°C affecting most locations [Cold - 3 weeks].

8. Taiwan, Luzon, and Southeastern China:

A DRY MAY AGGRAVATES LONG-TERM DEFICITS.

Less than half of normal rainfall was measured in many areas during October-May (see front cover), with very low amounts reported during the last four weeks. Since mid-April, 110–300 mm below normal rainfall was recorded across Taiwan, while deficits of 285–320 mm accumulated near Macao and Hong Kong [4 weeks].



EXPLANATION

TEXT: Approximate duration of anomalies is in brackets. Precipitation and temperature data are this week's values, unless otherwise indicated.

MAP: Approximate locations of major anomalies and episodic events are shown. See other maps in this Bulletin for current two-week temperature anomalies, four-week precipitation anomalies, longer-term anomalies, and other details.

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF MAY 26 – JUNE 1, 1991

Record-breaking heat continued to bake much of the country east of the Rockies. A third consecutive week of summer-like conditions produced numerous record highs from the Midwest to the East Coast. In addition, some locations set all-time maximum temperature records for the month of May. Washington, DC and Norfolk, VA both set record highs for May on Thursday when the mercury soared to 98°F and 99°F respectively, only to break them on Friday when highs reached 99°F and 100°F. The combination of record heat and high humidities produced extreme apparent temperatures over 100°F from southeastern Pennsylvania to northeast Georgia this week and average daily maximum apparent temperatures above 90°F during the last three weeks across portions of the mid-Atlantic (see Figure 1). Several records were also set for highest minimum temperatures. Baltimore, MD cooled to only 81°F Friday morning, an all-time record high minimum temperature for May. In sharp contrast, unseasonably cool and winter-like conditions affected much of the West. Record lows were observed from portions of California to Idaho as readings dipped to freezing. Frost coated the Wind River Basin of Wyoming while snow fell in the mountains of Wyoming and Utah. Elsewhere, severe weather erupted from the Great Plains to the East Coast, dumping heavy rain, hail, and generating wind gusts to 80 mph. Tornadoes touched down from the High Plains to the Great Lakes with the largest outbreak occurring on Thursday when as many as 20 twisters were reported from Wyoming to Minnesota. In southern Alaska, cooler temperatures and rain slowed the spread of a wildfire on the Kenai Peninsula that as of Monday had charred 8400 acres, according to press reports.

The week began with a strong high pressure system off the Southeast Coast. A warm, moist flow on the western side of the high, pumped summer-like heat and humidity across the eastern half of the U.S. Record daily highs were established up and down the East Coast as readings soared into the nineties. Philadelphia, PA soared to 93°F on Tuesday, the ninth time temperature has reached or exceeded 90°F in May. The muggy, warm weather aided the development of strong thunderstorms across the southern and central U.S. Heavy rain, hail, and strong wind gusts were common from Florida to Wisconsin. Tallahassee, FL measured 4.5" of rain on Monday while 6.5" soaked Kossuth, IA, flooding basements of many homes. Wind gusts up to 80 mph caused damage from Kansas to Wisconsin. Farther west, a cold front trekked across the Rockies, producing record cool conditions in parts of the Intermountain West and snow to portions of the northern Rockies.

During the last half of the week, the cold front in the Rockies moved into the Great Plains while record heat continued to bake the eastern U.S. Severe weather erupted from the southern

Plains to the Great Lakes. Heavy rains soaked portions of the Great Plains, the Midwest, the South, and Ohio Valley, causing localized flooding. Copious amounts of rain fell in short time periods with storms that moved through parts of Illinois, leaving up to 6 feet of water on some roads. Elsewhere, storms dumped nearly 5" of rain on already-saturated portions of the Great Plains. Strong wind gusts felled trees and power lines across parts of the Midwest while farther south a 250 foot radio tower was blown down in Borger, TX. Meanwhile, record heat continued in the East. Highs neared the 100°F mark in the mid-Atlantic and combined with the high humidity made heat advisories necessary, as apparent temperatures soared between 105°F and 110°F. Farther west, wind gusts above 80 mph knocked-out power to over 100,000 customers in southern Nevada and also sunk up to 6 boats on Lake Mead, according to press reports. A low pressure system that tracked across the southern Plateau dumped heavy rains in Utah and Arizona and snow in the mountains. The rain ended a two-month dry spell in northwestern Arizona where as much as 2.5" was recorded.

According to the River Forecast Centers, the greatest weekly totals (more than 2 inches) fell on most of the South, the central and much of the northern Plains, upper Midwest, Great Lakes, Ohio Valley, northern New England and central Appalachians, and scattered locations in the northern and central Rockies, southern Plateau, and Pacific Northwest, southern Alaska, and eastern Hawaii (Table 1). Moderate amounts were measured across the remainders of New England and the Ohio Valley, the mid-Atlantic, southern Florida, the Midwest, the remainders of the northern and central Plains, and parts of the northern and central Rockies, northern California and western Washington. Little or no precipitation fell on the southern Plains, the southern Rockies, the Southwest, and Far West.

Unseasonably warm weather enveloped the nation east of the Rockies (Table 2). Summer-like conditions and record daily highs were reported from the Midwest to the mid-Atlantic as readings soared near 100°F in the East, producing weekly departures between +10°F and +15°F from Iowa to Virginia. Departures of +5°F to +9°F were observed across most of the South, and the eastern Great Plains. Near to slightly above normal temperatures were confined to the Florida peninsula, Maine, the High Plains, and Hawaii. In Alaska, mild conditions were limited to the northern portions with weekly departures to +5°F reported at Barrow.

In sharp contrast, unseasonably cool conditions prevailed west of the Rockies (Table 3). Weekly departures between -5°F and -7°F were observed across most of the Intermountain West where readings dipped to near freezing. Temperatures across the remainder of the West were 2°F to 4°F below normal.

TABLE 1. SELECTED STATIONS WITH 3.50 OR MORE INCHES OF PRECIPITATION DURING THE WEEK OF MAY 26 – JUNE 1, 1991

<u>STATION</u>	<u>TOTAL</u> (INCHES)	<u>STATION</u>	<u>TOTAL</u> (INCHES)
YAKUTAT, AK	10.53	JACKSONVILLE, FL	4.17
TALLAHASSEE, FL	6.13	SALINA, KS	4.14
FORT WAYNE, IN	5.85	COLUMBUS, GA	4.08
BEAUFORT MCAS, SC	5.73	COLUMBUS/FT BENNING, GA	4.01
GRAND ISLAND, NE	5.14	MT. WASHINGTON, NH	3.75
RUSSELL, KS	4.71	BIRMINGHAM, AL	3.71
HILO/LYMAN HAWAII, HI	4.70	DULUTH, MN	3.69
TUPELO, MS	4.46	ALPENA, MI	3.67
CONCORDIA, KS	4.39	SAVANNAH, GA	3.61
HURON, SD	4.27	TAMPA, FL	3.50
MOBILE, AL	4.19		

TABLE 2. SELECTED STATIONS WITH TEMPERATURES AVERAGING 14.0°F OR MORE ABOVE NORMAL FOR THE WEEK OF MAY 26 - JUNE 1, 1991

<u>STATION</u>	<u>DEPARTURE</u> (°F)	<u>AVERAGE</u> (°F)	<u>STATION</u>	<u>DEPARTURE</u> (°F)	<u>AVERAGE</u> (°F)
MILWAUKEE, WI	+15.6	74.7	DETROIT, MI	+14.5	77.3
LANSING, MI	+15.5	76.9	WASHINGTON/DULLES, VA	+14.4	80.3
FLINT, MI	+15.5	76.3	HARRISBURG, PA	+14.3	80.2
ERIE, PA	+15.4	75.3	WILLIAMSPORT/LACOMI, PA	+14.3	77.8
BALTIMORE, MD	+15.3	82.6	GRAND RAPIDS, MI	+14.3	76.6
PHILADELPHIA, PA	+15.2	81.9	MARTINSBURG, WV	+14.2	80.2
WASHINGTON/NATIONAL, DC	+15.1	84.9	JACKSON, MI	+14.2	76.6
SOUTH BEND, IN	+15.1	78.6	TRAVERSE CITY, MI	+14.1	72.1
HOUGHTON LAKE, MI	+14.8	72.9	WILMINGTON, DE	+14.0	80.4
TOLEDO, OH	+14.7	77.8	CHICAGO/O'HARE, IL	+14.0	77.2
MILLVILLE, NJ	+14.5	80.4			

TABLE 3. SELECTED STATIONS WITH TEMPERATURES AVERAGING 4.5°F OR MORE BELOW NORMAL FOR THE WEEK OF MAY 26 - JUNE 1, 1991

<u>STATION</u>	<u>DEPARTURE</u> (°F)	<u>AVERAGE</u> (°F)	<u>STATION</u>	<u>DEPARTURE</u> (°F)	<u>AVERAGE</u> (°F)
OGDEN/HILL AFB, UT	-6.9	54.6	SALT LAKE CITY, UT	-5.2	57.4
PRICE, UT	-6.7	55.0	ELY, NV	-5.1	48.9
WINSLOW, AZ	-6.7	59.9	CEDAR CITY, UT	-5.1	55.4
WINNEMUCCA, NV	-6.6	51.9	PENDLETON, OR	-5.1	56.7
LAS VEGAS, NV	-6.5	71.2	ELKO, NV	-5.0	51.1
BURNS, OR	-6.1	49.6	LANDER, WY	-4.7	52.0
SEXTON SUMMIT, OR	-5.7	46.3	RENO, NV	-4.7	53.3
LOVELOCK, NV	-5.6	56.4	MEDFORD, OR	-4.6	56.1
BLYTHE, CA	-5.4	77.7	DELTA, UT	-4.5	57.6
BOISE, ID	-5.3	55.6	WALLA WALLA, WA	-4.5	58.5
MEACHAM, OR	-5.2	45.5			

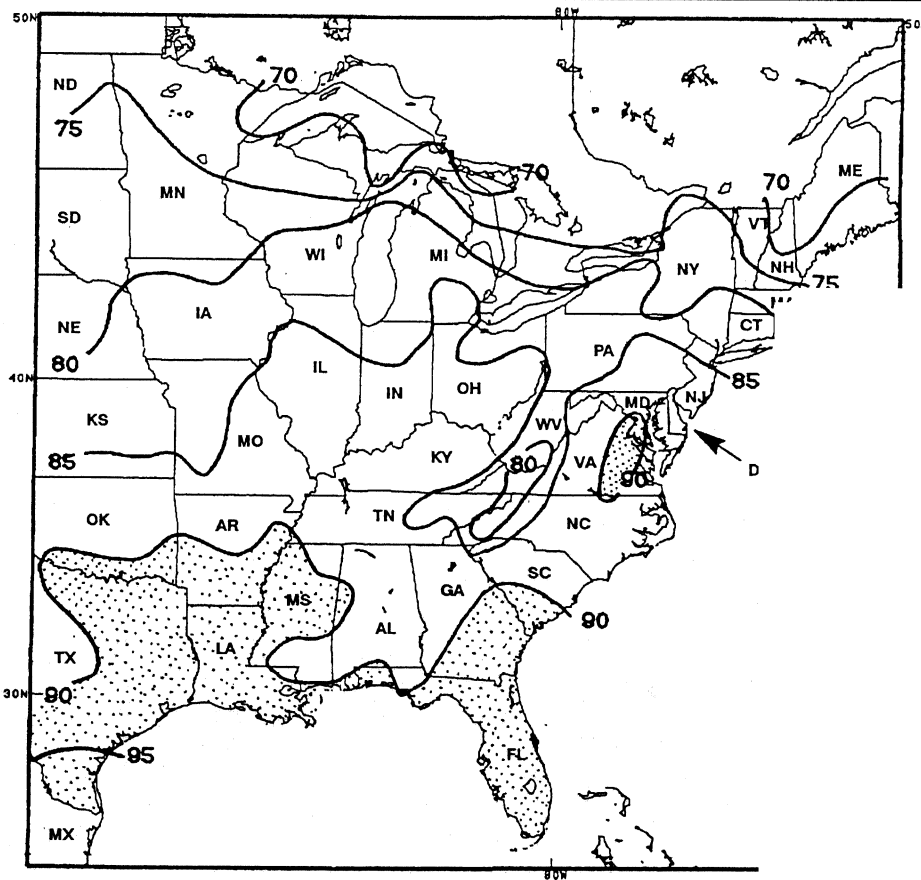
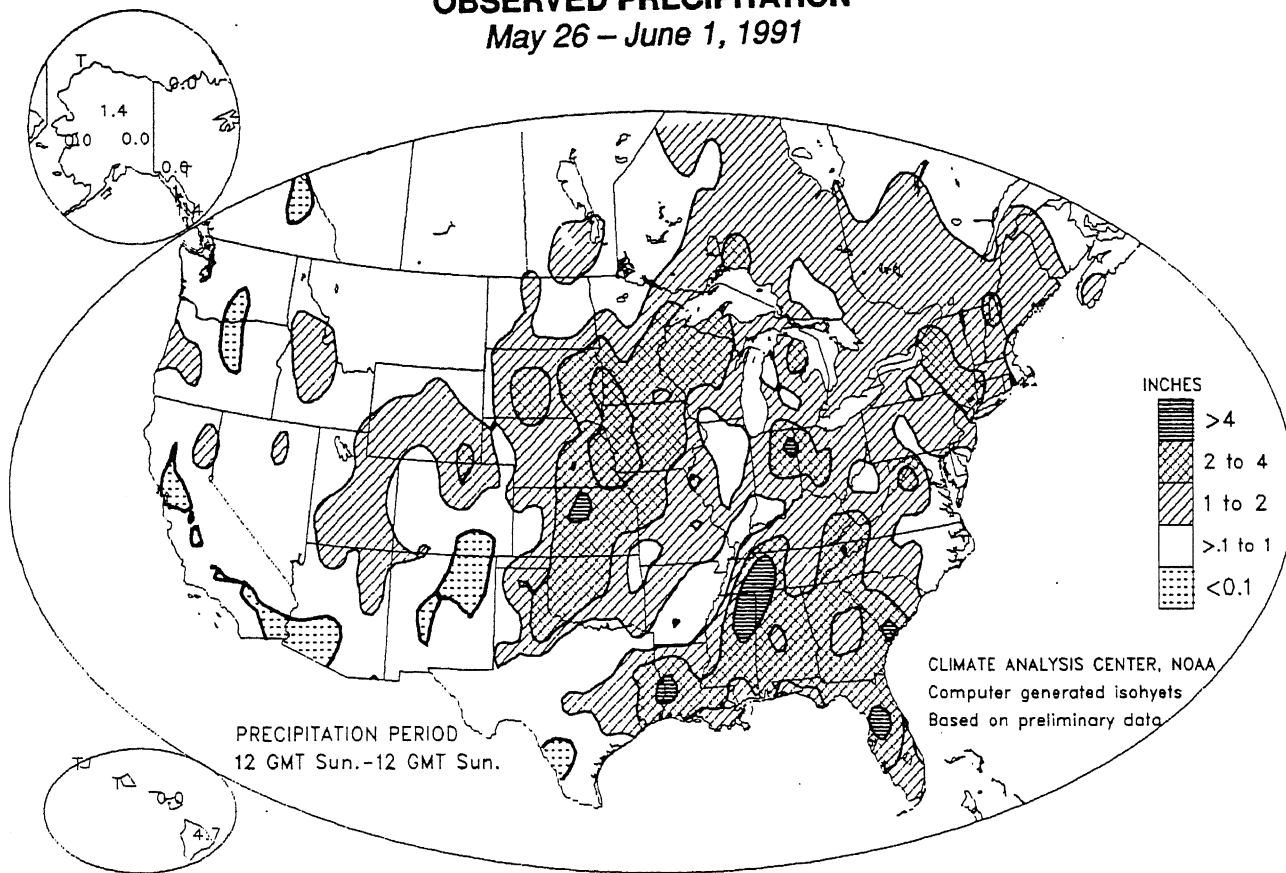


FIGURE 1. Average Daily Maximum Apparent Temperature from May 12 - June 1, 1991
Isopleths drawn on 80°F

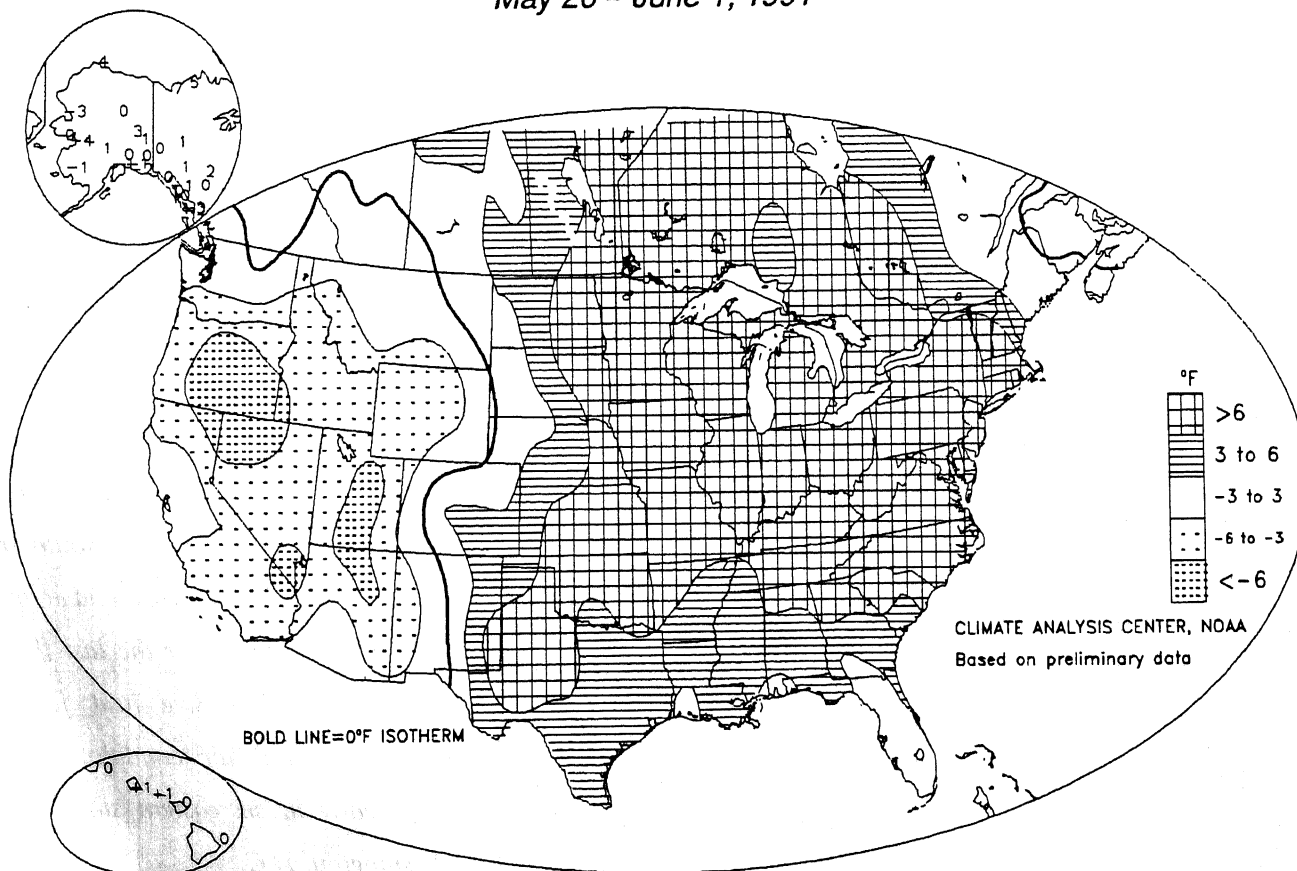
OBSERVED PRECIPITATION

May 26 – June 1, 1991



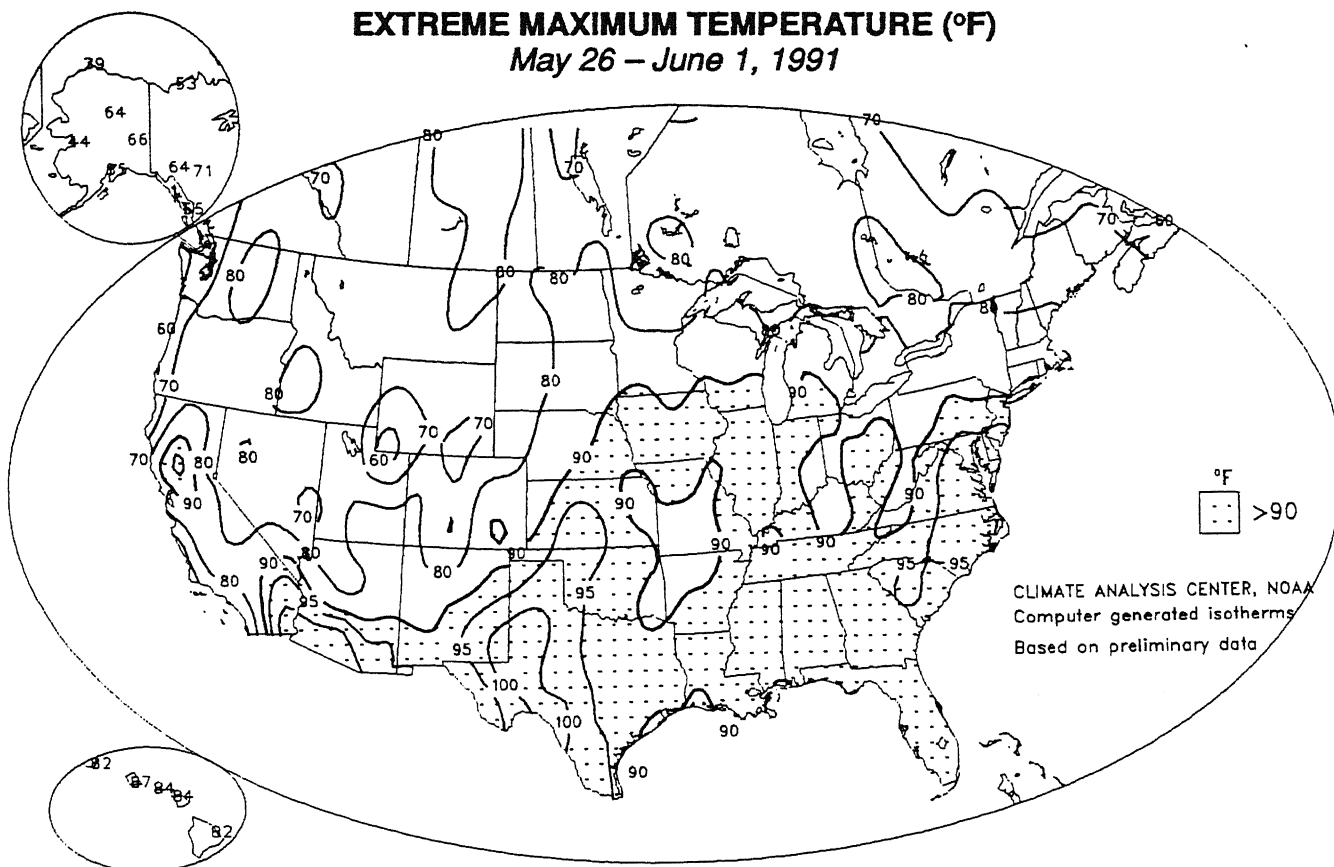
DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)

May 26 – June 1, 1991



EXTREME MAXIMUM TEMPERATURE (°F)

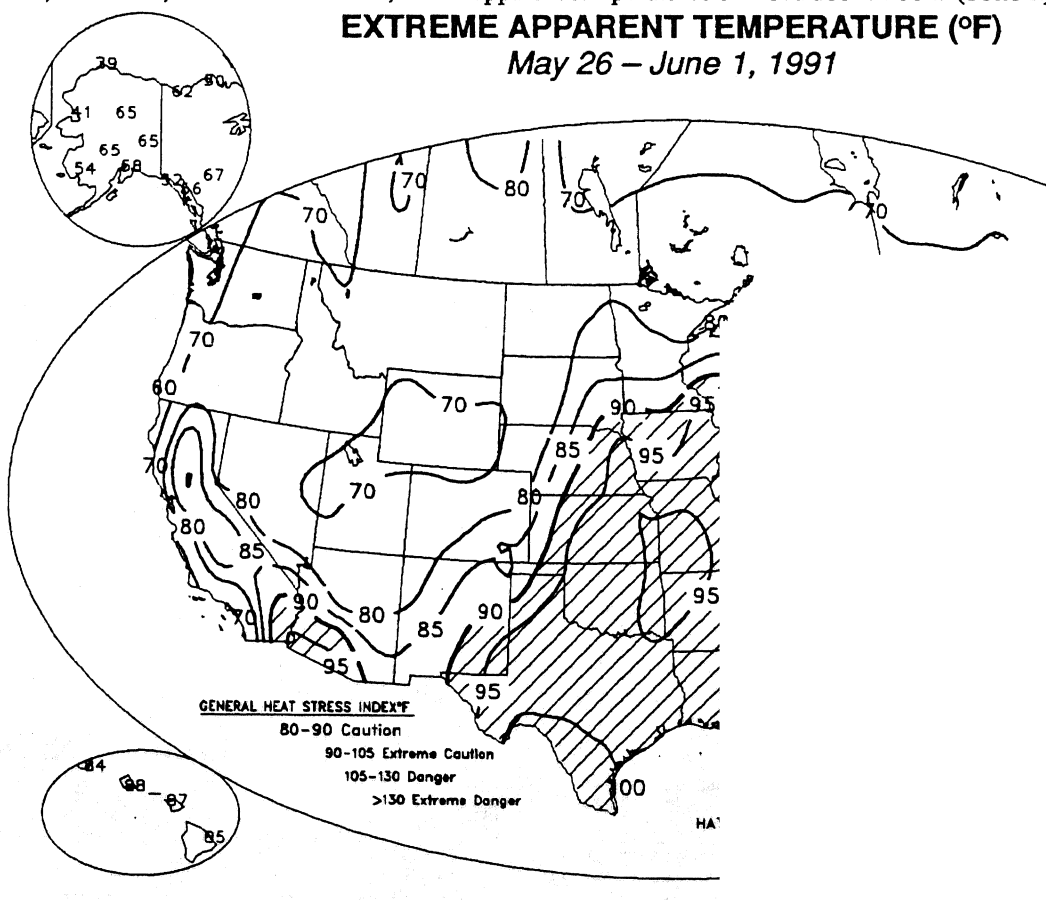
May 26 – June 1, 1991



The month of May ended with intense heat entrenched in the eastern-half of the nation as record-breaking high temperatures were reported from the Midwest to the Atlantic Coast. Readings soared to 95°F or higher in the desert Southwest, southern Plains, and middle Atlantic states (top). The high temperatures were accompanied by high humidity allowing for sweltering conditions in the middle Atlantic, Southeast, and southern Plains, where apparent temperatures climbed above 100°F (bottom).

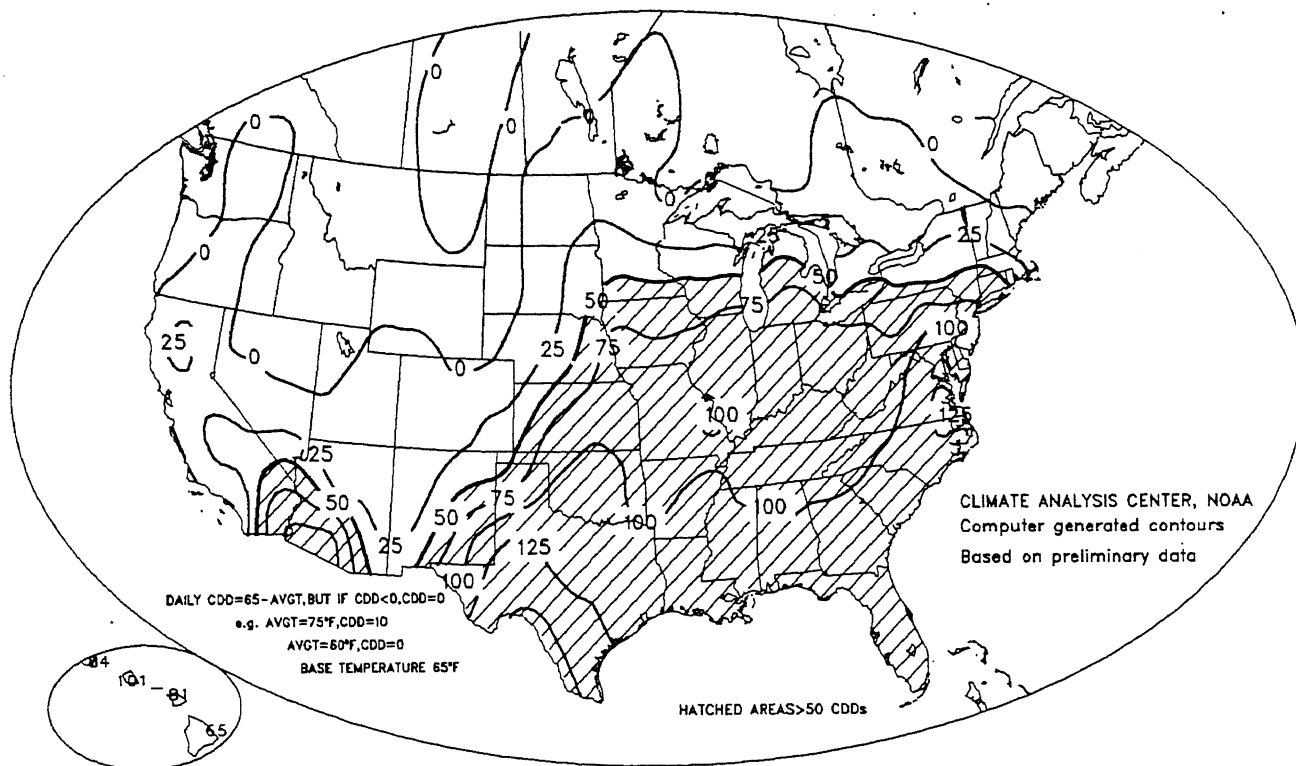
EXTREME APPARENT TEMPERATURE (°F)

May 26 – June 1, 1991



WEEKLY TOTAL COOLING DEGREE DAYS

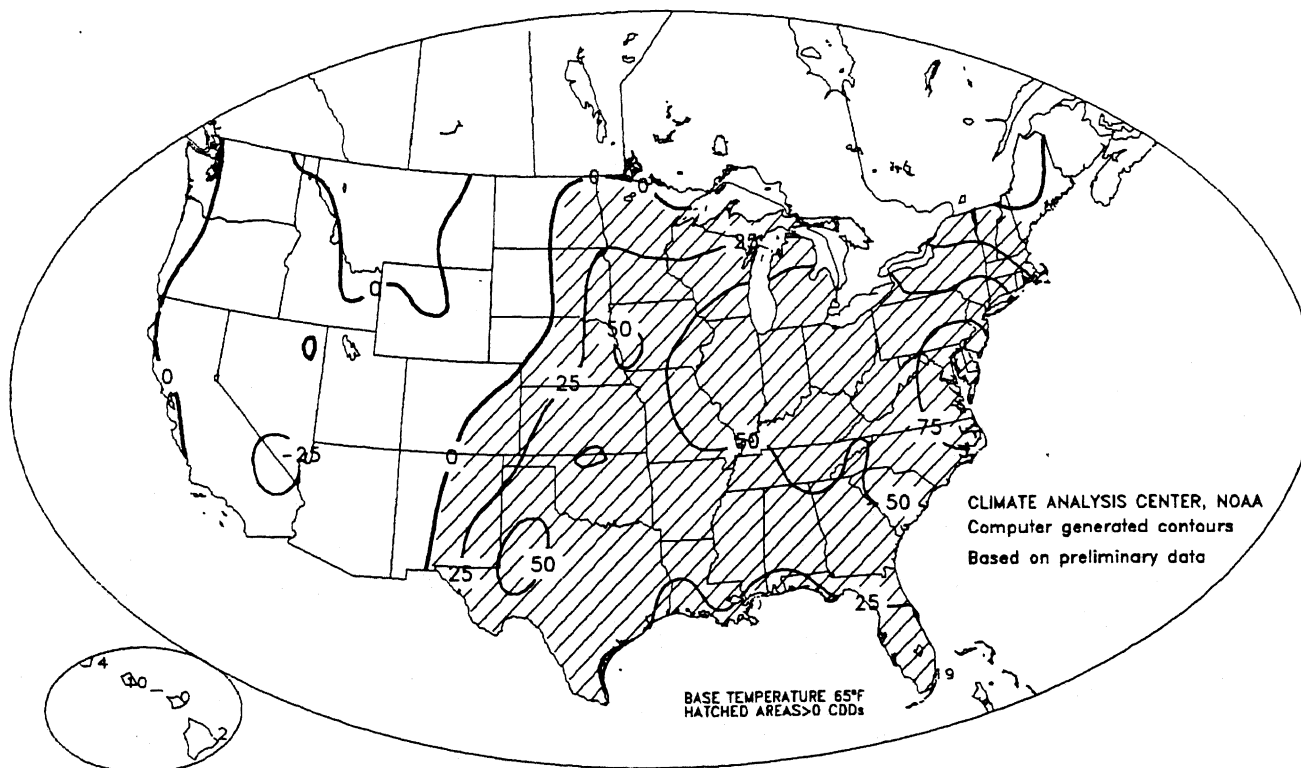
May 26 – June 1, 1991



JUNE 8, 1991 WILL BE THE LAST ISSUE IN WHICH DEGREE DAY MAPS WILL APPEAR IN THE WEEKLY CLIMATE BULLETIN ON A REGULAR BASIS. CONTACT THE CLIMATE ANALYSIS CENTER FOR FURTHER INFORMATION (ADDRESS AND PHONE NUMBER ON INSIDE FRONT COVER).

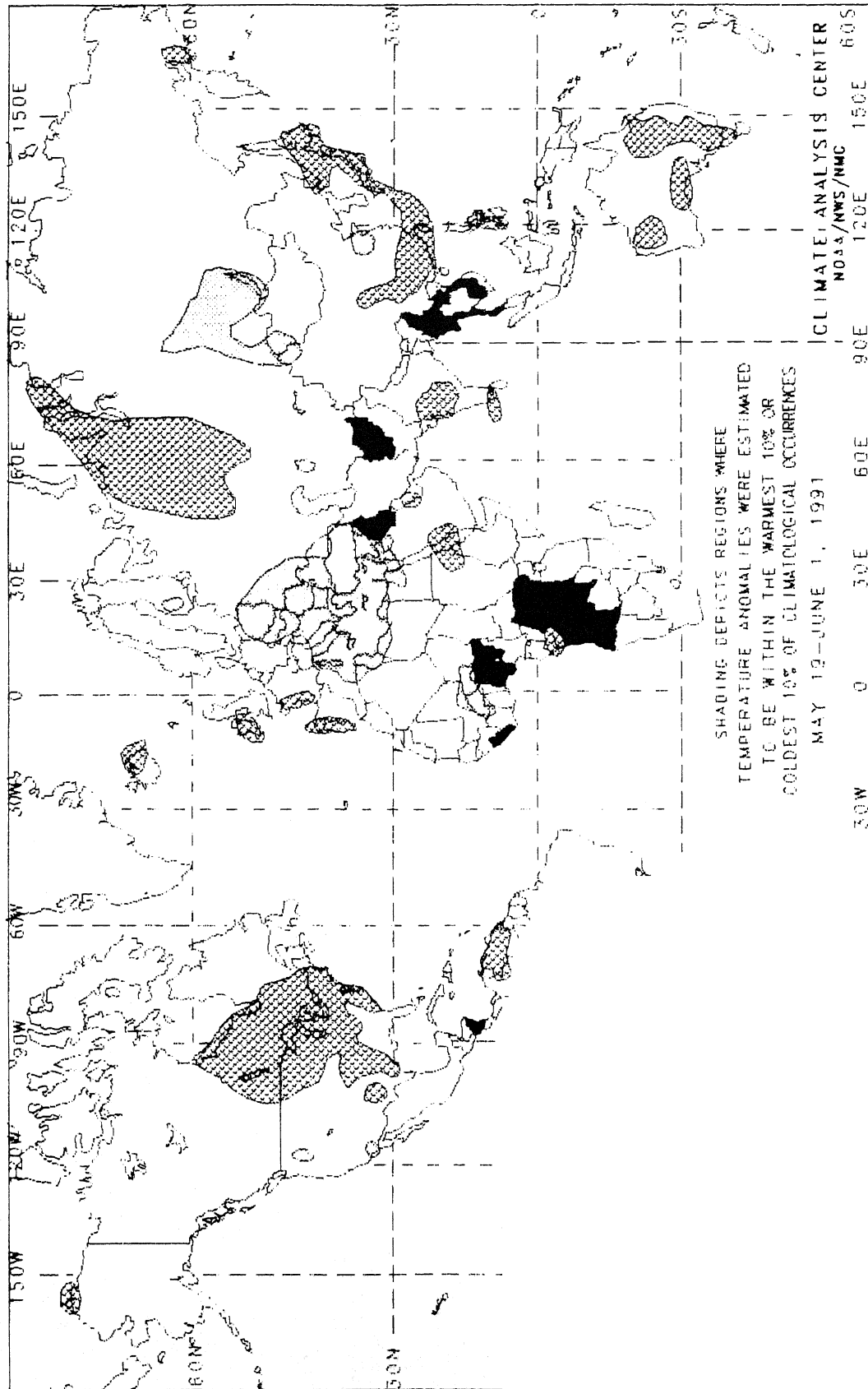
WEEKLY DEPARTURE FROM NORMAL CDD

May 26 – June 1, 1991



2-WEEK GLOBAL TEMPERATURE ANOMALIES

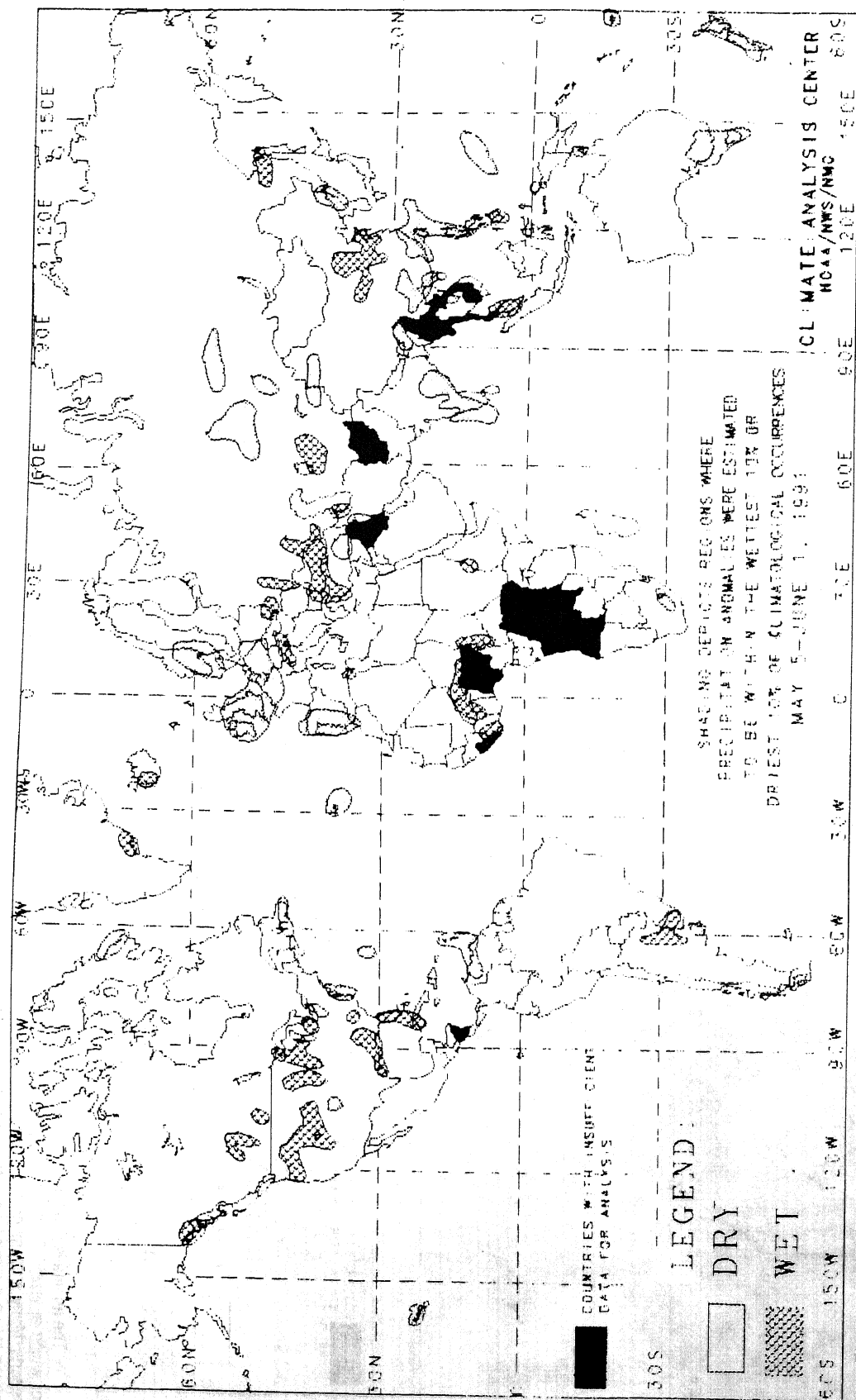
MAY 19 - JUNE 1, 1991



In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

MAY 5 - JUNE 1, 1991



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

